CLAIMS

1. An ink comprising: a dye; and water and/or a water-miscible organic solvent,

wherein the dye comprises a dye compound having at least one heterocyclic structure, and the ink further comprises, as an additive, at least one compound capable of chemically interacting with the dye compound.

2. The ink according to claim 1, wherein the dye compound has two hetero-aromatic rings bonded to each other via an azo bond.

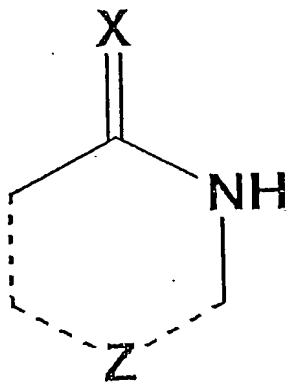
3. The ink according to claim 1, wherein the dye compound has a metal-chelated hetero-aromatic ring structure.

4. The ink according to any of claims 1 to 3, wherein the additive is a hydrogen-bonding compound.

5. The ink according to any of claims 1 to 4, wherein λmax of a visible-range absorption spectrum of a diluted aqueous solution is shifted by at least 5 nm as compared with that in an absence of the additive, the diluted aqueous solution being a mixture of the additive and a heterocyclic structure-having dye mixed in a molar ratio of 1/1 and having a concentration of at most 1 mmol/liter.

6. The ink according to any of claims 1 to 5, wherein the additive has a cyclic amide structure and the dye compound has a nitrogen-containing 6-membered hetero-aromatic ring.

7. The ink according to any of claims 1 to 6, wherein the additive is a compound having a partial structure represented by the following formula (A):



(A)

wherein X represents an oxygen atom, a sulfur atom, or N-R (R represents a hydrogen atom, or any of an alkyl group, an alkenyl group, an alkynyl group, an aralkyl group, an aryl group or a heterocyclic group); and Z represents an atomic group capable of forming a 5- to 8-membered ring.

8. An ink set containing at least one ink of any of claims 1 to 7.

9. An inkjet recording method, which comprises recording an image by using one of the ink and ink set of any of claims 1 to 8 with an inkjet printer.

10. An ink set comprising:

at least one yellow ink, the yellow ink comprising an aqueous medium and an yellow dye dispersed or dissolved in the aqueous medium, and the yellow dye having: an oxidation potential of more positive than 1.0 V (vs SCE); λmax within a range of from 390 nm to 470 nm; and an absorbance ratio of I(λmax + 70 nm)/I(λmax) of at most 0.4, wherein I(λmax) is an absorbance of λmax, and I(λmax + 70 nm) is an absorbance of λmax + 70 nm; and

black ink comprising at least one of the yellow dye.

11. The ink set according to claim 10, wherein the absorbance ratio of I(λmax + 70 nm)/I(λmax) of the yellow dye is at most 0.2.

12. The ink set according to claim 10 or 11, wherein the yellow dye is a compound repesented by the following formula (1):

$$(A\text{-}N{=}N\text{-}B)n\text{-}L \qquad (1)$$

wherein A and B each independently represents an optionally-substituted heterocyclic group; n is 1 or 2; and L represents a hydrogen atom or a substituent bonding to A or B at any desired position.

13. The ink set according to any of claims 10 to 12, wherein an accelerated fading rate constant of the yellow ink is smaller than that of the black ink and wherein the accelerated fading rate constant is determined as the following method: an ink to be analyzed is printed on a reflection medium, and a reflection density (D_B) thereof is measured through a status A filter; one point of a sample having the reflection density (D_B) of from 0.90 to 1.10 in an yellow region is defined as an initial density of the ink, and the printed sample is forcedly faded by using an ozone fading tester where 5 ppm ozone is generated all time; a period of time in which the reflection density of the faded sample is reduced to 80 % of the initial density of the original sample is counted, and the accelerated fading rate constant of the ink is derived from it.

14. The ink set according to any of claims 10 to 13, wherein a concentration of a water-soluble organic solvent in the yellow ink is lower than that in the black ink.

15. The ink set according to any of claims 10 to 14,

wherein a total solvent concentration in the yellow ink is lower than that in the black ink, and the total solvent concentration being determined by summing up concentrations of at least any two solvents selected from a glycol-type organic solvent, a glycol alkyl ether-type organic solvent and an amide-type organic solvent.

16. An inkjet color recording method, comprising recording an image on an image-receiving material having an image-receiving layer on a support by using an ink composition, the ink composition containing at least one of yellow azo die and black azo dye and a water-miscible organic solvent, wherein an absolute value of an image density change at a point where a reflection density at a λmax region of the recorded image is 1.5, is at most 20 %.

17. The inkjet color recording method according to claim 16, wherein the image having a reflection density of 1.5 at a λmax region thereof is printed, and the density change is represented by the following formula in which Da indicates an initial density of an image area, and Db indicates a density thereof after left in an atmosphere of 80°C and 15 % RH for 7 days:

$$\text{Density Change (\%)} = (Db - Da)/Da \times 100.$$

18. The inkjet color recording method according to claim 16 or 17, wherein the dye is an yellow dye represented by the following formula (1):

$$(A\text{-}N{=}N\text{-}B)n\text{-}L \qquad (1)$$

wherein A and B each independently represents an optionally-substituted heterocyclic group; L represents a hydrogen atom, a chemical bond or a divalent linking group; n is 1 or 2; provided that when n is 1, then L is a hydrogen atom, and A and B are both monovalent heterocyclic groups, and when n is 2, then L is a chemical bond or a divalent linking group, and one of A and B is a monovalent heterocyclic group and other one is a divalent heterocyclic group; when n is 2, then two A's may be the same or different, and two B's may be the same or different.

19. The inkjet color recording method according to any of claims 16 to 18, wherein the ink composition further contains a surfactant and the surfactant is a betaine-type surfactant.

20. The inkjet color recording method according to claim 19, wherein the betaine-type surfactant is represented by the following formula (6):

$$(R)p\text{-}N\text{-}[L\text{-}(COOM)q]r \qquad (6)$$

wherein R represents a hydrogen atom, an alkyl group, an aryl group, or a heterocyclic group; L represents a divalent linking group; M represents a hydrogen atom, an alkali metal atom, an ammonium group, a protonated organic amine or nitrogen-containing heterocyclic group, or a quaternary ammonium ion group, and when it is a counter ion to the ammonium ion with the N atom in the formula, then it is a group not existing as a cation; q indicates an integer of 1 or more; r indicates an integer of from 1 to 4; p indicates an integer of from 0 to 4; p+r is 3 or 4; when p+r is 4, then the N atom in the formula is a protonated ammonium atom ($=N^{+}=$); when q is 2 or more, then COOM's may be the same or different; when r is 2 or more, then (L-(COOM)q)'s may be the same or different; when p is 2 or more, then R's may be the same or different.

21. The inkjet color recording method according to any of claims 16 to 20, wherein the ink composition contains as the water-miscible organic solvent at least one of triethylene glycol monobutyl ether, diethylene glycol monobutyl ether, tripropylene glycol monomethyl ether, and dipropylene glycol monomethyl ether.

22. The inkjet color recording method according to any of claims 16 to 21, wherein the dye has a oxidation potential

of more positive than 1.0 V (vs SCE).

23. The inkjet color recording method according to any of claims 16 to 22, wherein the image-receiving layer contains white an inorganic pigment particle.